

Notice of Allowability

Application No.

10/706,262

Examiner

NGHI V. TRAN

Applicant(s)

HARIHARAN ET AL.

Art Unit

2451

- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 10/09/2008.
2. ☒ The allowed claim(s) is/are 1,2,4-10,12-18 and 20-24.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
(a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
(b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying Indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 10/10/2009.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

/John Follansbee/
Supervisory Patent Examiner, Art Unit 2451

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.
2. Authorization for this examiner's amendment was given in a telephone interview with Edward Kaplonski (Reg. N. 61,148) September 28, 2009.
3. The application has been amended as follows:

IN THE CLAIMS

1. (Currently Amended) A system for controlling packet classification behavior of a plurality of heterogeneous network processors in a network including at least one packet classification application being network processor independent and utilized in at least one host processor, the system comprising:
a memory:
a plurality of definable rules for determining packet classification behavior in a predetermined priority sequence,
a plurality of generic application program interfaces (APIs) for:

(i) communicating with each of (a) at least one packet classification application in a network processor independent manner and (b) the plurality of heterogeneous network processors in a network processor specific manner, and

(ii) managing the packet classification behavior of the plurality of heterogeneous network processors in the network processor specific manner by managing software or firmware associated with the plurality of heterogeneous network processor,

wherein the plurality of generic APIs are devoid of a separate set of APIs which are specific to each type of one or more of the plurality of heterogeneous network processor, provide a null behavior as a packet classification behavior for unsupported operations, includes a define API for allowing a rule of the plurality of definable rules to be defined, and are defined using abstraction.

2. (Previously Presented) The system of claim 1 wherein the plurality of generic APIs further return a null behavior for portion of the plurality of heterogeneous network processors in which a particular function of a particular API is not supported by one or more of the plurality of heterogeneous network processors.

3. (Canceled)

4. (Previously Presented) The system of claim 2 wherein the define API allows a priority, a rule number, a rule type, at least one corresponding field and at least one corresponding patterns to be defined.
5. (Previously Presented) The system of claim 1 wherein the plurality of generic APIs include a purge API to allow a portion of the plurality of rules for a network processor of the plurality of heterogeneous network processors to be deleted.
6. (Previously Presented) The system of claim 1 wherein the plurality of generic APIs include a delete API for allowing a rule of the plurality of definable rules to be deleted.
7. (Previously Presented) The system of claim 1 wherein the plurality of generic APIs include a list API for allowing a portion of the plurality of rules to be listed.
8. (Previously Presented) The system of claim 1 wherein the plurality of generic APIs include a swap API for allowing a first priority of a first rule to be swapped with a second priority of a second rule.

9. (Currently Amended) A computer program product embodied on a non-transitory computer-readable storage medium for controlling packet classification behavior of a plurality of heterogeneous network processors in a network including at least one packet classification application being network processor independent and utilized in at least one host processor, the program comprising instruction for:

implementing a plurality of generic application program interface (APIs) devoid of a separate set of APIs which are specific to each type of one or more of the plurality of heterogeneous network processors for communicating with the at least one packet classification application and the plurality of heterogeneous network processors, the plurality of generic APIs for communicating with the at least one packet classification application in the at least one host processor in a network processor independent manner, the plurality of generic APIs managing the packet classification behavior of the plurality of heterogeneous network processors in a network processor specific manner by managing software or firmware associated with the plurality of heterogeneous network processor and the plurality of generic APIs further providing a null behavior as a packet classification behavior for unsupported operations and including a define API for allowing a rule of the plurality of definable rules to be defined by abstraction; wherein the plurality of generic APIs allow the at least one packet classification application to be network processor independent and to manage the packet classification behavior of the plurality of heterogeneous network processors in

the network processor specific manner and wherein the program product uses a plurality of definable rules for determining packet classification behavior in a predetermined priority sequence.

10. (Previously Presented) The computer-readable program product of claim 9 wherein the plurality of generic APIs further returns a null behavior for a portion of the plurality of heterogeneous network processors in which a particular function of a

11. (Canceled)

12. (Previously Presented) The computer-readable program product of claim 10 wherein the define API allows a priority, a rule number, a rule type, at least one corresponding field and at least one corresponding patterns to be defined.

13. (Previously Presented) The computer-readable program product of claim 9 wherein the plurality of generic APIs include a purge API to allow a portion of the plurality of rules for a network processor of the plurality of heterogeneous network processors to be deleted.

14. (Previous Presented) The computer-readable program product of claim 9 wherein the plurality of generic APIs include a delete API for allowing a rule of the plurality of rules to be deleted.

15. (Previous Presented) The computer-readable program product of claim 9 wherein the plurality of generic APIs include a list API for allowing a portion of the plurality of rules to be listed.

16. (Previously Presented) The computer-readable program product of claim 9 wherein the plurality of generic APIs include a swap API for allowing a first priority of a first rules to be swapped with a second priority of a second rule.

17. (Currently Amended) A method for controlling packet classification behavior of a plurality of heterogeneous network processors in a network using a plurality of definable rules for determining packet classification behavior in a predetermined priority sequence, the network also including at least one host processor utilizing at least one packet classification application, the method comprising:

- (a) abstracting, by the host processor, the packet classification behavior of each of the plurality of heterogeneous network processors;
- (b) providing, by the host processor, a plurality of generic application program interfaces (APIs) based on the abstraction devoid of a separate set of

APIs which are specific to each type of one or more of the plurality of heterogeneous network processors, the plurality of generic APIs communicating with the at least one packet classification application and the plurality of heterogeneous network processors, the plurality of generic APIs for communicating with the at least one packet classification application in the at least one host processor in a network processor independent manner, the plurality of generic APIs managing the packet classification behavior of the plurality of heterogeneous network processors in a network processor specific manner by managing software or firmware associated with the plurality of the heterogeneous network processors, and the plurality of generic APIs further providing a null behavior as a packet classification behavior for unsupported operations and including a define API for allowing a rules of the plurality of definable rules to be defined by abstraction;

wherein the plurality of generic APIs allow the at least one packet classification application to be network processor independent and to manage the packet classification behavior of the plurality of heterogeneous network processors in the network processor specific manner.

18. (Previously Presented) The method of claim 17 wherein the plurality of generic APIs further return a null behavior for a portion of the plurality of heterogeneous network processors in which a particular function of a particular

API is not supported by one or more of the plurality of heterogeneous network processors.

19. (Previously Presented) The method of claim 17 wherein a plurality of rules are used in the packet classification behavior and wherein the plurality of generic APIs include a define API for allowing a rule of the plurality of rules to be defined.

20. (Previously Presented) The method of claim 17, wherein the define API allows a priority, a rule number, a rule type, at least one corresponding field and at least one corresponding patterns to be defined.

21. (Previously Presented) The method of claim 17 wherein the plurality of generic APIs include a purge API to allow a portion of the plurality of definable rules for a network processor of the plurality of heterogeneous network processors to be deleted.

22. (Previously Presented) The method of claim 17 wherein the plurality of generic APIs include a delete API for allowing a rule of the plurality of definable rules to be deleted.

23. (Previously Presented) The method of claim 17 wherein the plurality of generic APIs include a list API for allowing a portion of the plurality of definable rules to be listed.

24. (Previous Presented) The method of claim 17 wherein the plurality of generic APIs include a swap API for allowing a first priority of a first rule to be swapped with a second priority of a second rule.

25. (Canceled)

4. The following is an examiner's statement of reasons for allowance: The cited prior art fails to teach a plurality of generic application program interfaces (APIs) for controlling packet classification behavior of a plurality of heterogeneous network processors in a network including at least one packet classification application being network processor independent and utilized in at least one host processor including communicate with each of (a) at least one packet classification application in a network processor independent manner and (b) the plurality of heterogeneous network processors in a network processor specific manner, and manage the packet classification behavior of the plurality of heterogeneous network processors in the network processor specific manner by managing software or firmware associated with the plurality of heterogeneous network processor, wherein the plurality of generic APIs are devoid of a separate set of APIs which are specific to each type of one or more of

the plurality of heterogeneous network processor, provide a null behavior as a packet classification behavior for unsupported operations, includes a define API for allowing a rule of the plurality of definable rules to be defined, and are defined using abstraction.

5. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to NGHI V. TRAN whose telephone number is (571)272-4067. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Follansbee can be reached on (571) 272-3964. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nghi V Tran
Examiner
Art Unit 2451

/John Follansbee/
Supervisory Patent Examiner, Art Unit 2451